STIC Search Report
EIC 3600

STIC Database Tracking Number: 172247

TO: Kim Bui
Location: knx 5 B 41
Art Unit : 3626

Case Serial Number: 09815646

From: Bode Akintola
Location: EIC 3600
KNX 4 B 59
Phone: 571-272-3514

Olabode.akintola@uspto.gov

Search Notes

Examiner Kim,

Please find enclosed the results of your search request.

If you need a refocus, please feel free to contact me.

Thanks,

Bode

STIC EIC 3600
Search Request Form

172247

USPTO

Today's Date: Class/Subclass What date would you like to use to limit the search?
Priority Date: 03/23/00 Other:

Name KIM T BUI

AU 3626 Examiner # 65014

Room # 5B41 Phone 571-272-6760

Serial # 09-815646

Format for Search Results (Circle One):

PAPER DISK EMAIL

Where have you searched so far?

USP DWPI EPO JPO ACM IBM TDB

IEEE INSPEC SPI Other ___________

Is this a "Fast & Focused" Search Request? (Circle One) YES NO

A "Fast & Focused" Search is completed in 2-3 hours (maximum). The search must be on a very specific topic and meet certain criteria. The criteria are posted in EIC3600 and on the EIC3600 NPL Web Page at http://ptoweb/patents/stic/stic-tc3600.htm.

What is the topic, novelty, motivation, utility, or other specific details defining the desired focus of this search? Please include the concepts, synonyms, keywords, acronyms, definitions, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract, background, brief summary, pertinent claims and any citations of relevant art you have found.

- See claim 8..
- and 2 parsing
- and 5 linear combination

STIC Searcher ____________________ Phone ____________________

Date picked up ____________________ Date Completed ____________________

Search and Information Resources Administration

STIC Search Results Feedback Form

USPTO

EIC 3600

Questions about the scope or the results of the search? Contact *the EIC searcher or contact*:

Karen Lehman, EIC 3600 Team Leader
306-5783, PK5- Suite 804

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 3620 (optional)*
- *Relevant prior art* ***found****, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

  Types of relevant prior art found:
  - ☐ Foreign Patent(s)
  - ☐ Non-Patent Literature
    (journal articles, conference proceedings, new product announcements etc.)
- *Relevant prior art* ***not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

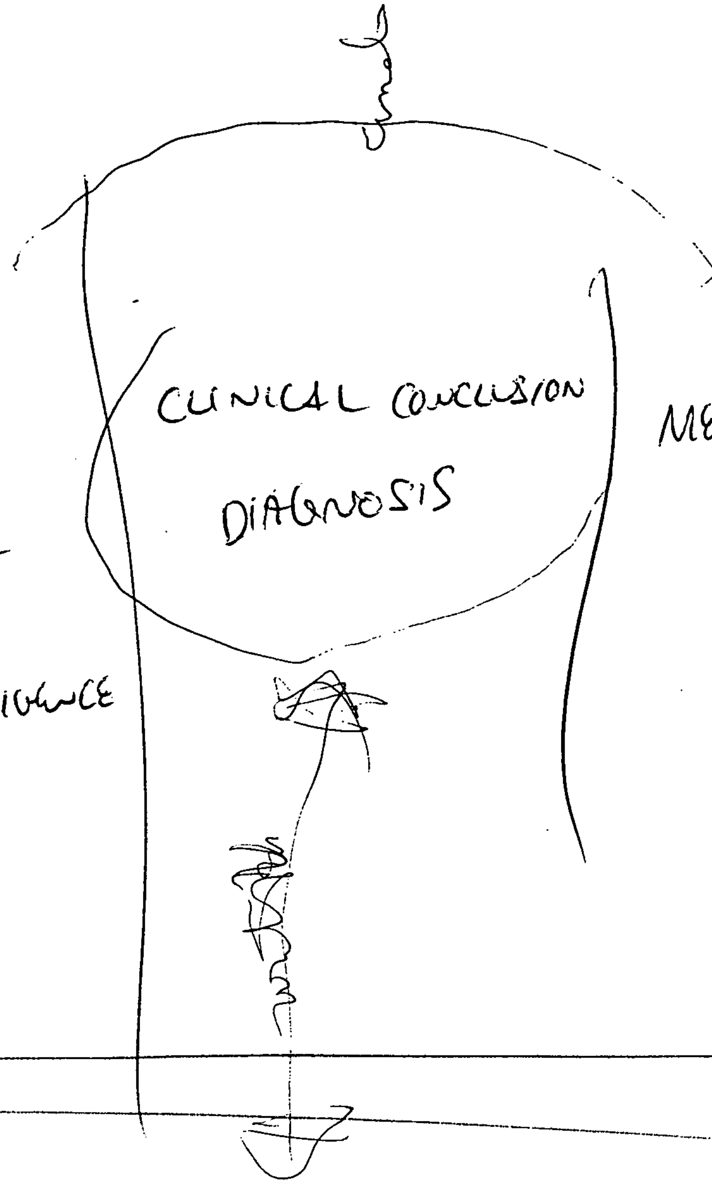
Drop off or send completed forms to EIC3600 PK5 Suite 804

sira
Search and Information Resources Administration

FUZZY

NEURAL NET
NETWORK

A I
ARTIFICIAL INTELLIGENCE



MEMBERSHIP

FUZZY NEURAL NET AI	CONFIDENCE CORRECT CERTAINTY ACCURACY	DECISION RESULT CONCLUSION DIAGNOSIS

```
Set     Items   Description
S1       1568   FUZZY OR NEURAL()(NET OR NETWORK)
S2     168547   CLINICAL()CONCLUSION OR DIAGNOS?
S3        985   CONFIDENCE(2N)LEVEL? ?
S4        468   S1 AND S2
S5          4   S4 AND S3
S6          4   RD (unique items)
? show file
File 149:TGG Health&Wellness DB(SM) 1976-2005/Nov W2
         (c) 2005 The Gale Group
File 444:New England Journal of Med. 1985-2005/Nov W1
         (c) 2005 Mass. Med. Soc.
```

6/3,K/1   (Item 1 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

02241060   SUPPLIER NUMBER: 106651719   (USE FORMAT 7 OR 9 FOR FULL TEXT)

Development and implementation of a problem-focused neurological assessment system.

Lehman, Cheryl A.; Hayes, Joan M.; LaCroix, Michel; Owen, Steven V.; Nauta, Haring J.W.

Journal of Neuroscience Nursing, 35, 4, 185(8)
August,
2003
PUBLICATION FORMAT: Magazine/Journal; Refereed   ISSN: 0888-0395
LANGUAGE: English RECORD TYPE: Fulltext TARGET AUDIENCE: Professional
WORD COUNT: 4588   LINE COUNT: 00405

TEXT:

...a six-hospital teaching center about the quality of nursing assessments for patients with neurological **diagnoses** were validated. This system enables the physician to guide the nurse's assessment by ordering... ...   Southwestern United States voiced concern about the quality of nursing assessments of patients with neurological **diagnoses** . Specifically, they were concerned about a lack of early recognition of subtle changes in neurological...

...the form were performed each time that neurological assessment was performed, regardless of the neurological **diagnosis** . However, out of 1,285 potential assessments, 388, or more than 30%, were never documented ...

...physical location of neuroscience patients within the hospitals. Patients with a primary neurological or neurosurgical **diagnosis** were found on all medical-surgical nursing units, including ear, nose, and throat; orthopedics; and...

...positive change in confidence scores from pre- to posttesting.

This confidence survey revealed a lower **level** of pretest **confidence** than the first confidence assessment nearly a year earlier. The difference in scores is probably...

...give up the GCS. It is still being performed on many patients, regardless of the **diagnosis** , relevance to the patient's condition, or state of alertness. Residents have also been very...

...nurses to begin to think through a situation critically and to connect the patient's **diagnoses** or symptoms to the tests ordered. Tests frequently do not fit the **diagnosis** , such as "orientation" on an alert young patient with a T-7 injury.

Discussion

Several...

...systems issue with off-service neuroscience patients, so patients with a primary neurological or neurosurgical **diagnosis** could be assigned to any medical-surgical specialty unit.

Implementation of the Problem-Focused Neurological...

...the past 6 weeks. Her symptoms worsened a week ago, and she now reports intermittent **fuzzy** vision. Sara was admitted to the hospital after a magnetic resonance imaging scan revealed a...

6/3,K/2 (Item 2 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

01659607 SUPPLIER NUMBER: 18951000 (USE FORMAT 7 OR 9 FOR FULL TEXT)
The study of nursing informatics.
Graves, Judith R.; Corcoran-Perry, Sheila
Holistic Nursing Practice, v11, n1, p15(10)
Oct,
1996
PUBLICATION FORMAT: Magazine/Journal ISSN: 0887-9311 LANGUAGE: English
RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE: Professional
WORD COUNT: 4891 LINE COUNT: 00424

... the minimum nursing data set and which data elements are required to capture different nursing **diagnostic** and/or classification systems, interventions and outcomes. The existence of apparent synonyms and even antonyms...

...indicants of a phenomenon.
Another difficulty that arises in measuring nursing phenomena lies in the **fuzzy** nature of the phenomena. The property of fuzziness of an entity is the result of...

...know what or how data and information are used by clinicians in measuring complex and **fuzzy** nursing phenomena.
Knowledge development in the area of nursing data was led by Werley (1987...

...in the development of a language and a taxonomy, and therefore data elements, representing nursing **diagnosis** -based interventions. Still other work in the identification of data element sets representing theoretical frameworks ...with laws and relationships that connect the elements of nursing data. What differs is the **level** of **confidence** possible about the accuracy of the rules. SEE ATTACHED FULLTEXT
Knowledge has the attributes of accuracy, utility (relevance...rules (Negoita, 1985). In the health field, expert system technology processes knowledge into decisions about **diagnosis** and management of clinical problems. Similarly, new discoveries are being made by computer programs that...

...tools. Iliad(TM) manages expert medical and nursing knowledge and processes it into suggestions about **diagnosis** and management. ARKS(C) manages research knowledge about relationships between variables studied together and processes...

...L., Gonzales, E., & Caswell, D. (1988). Reliability and validity of an assessment guide for nursing **diagnosis** . Australian Journal of Advanced Nursing, 5, 16-22.
Corcoran, S.M. (1986). ...systems. New York: Springer-Verlag (pp. 3-9).
Negoita, C.V. (1985). Expert systems and **fuzzy** systems. Menlo Park, CA: The Benjamin-Cummins Publishing Co.
Ozbolt, J.G. (1986). A prototype...

...Haug, P., Bouhaddou, O., & Lincoln, M. (1988). ILIAD as an expert consultant to teach differential **diagnosis** . In R.A. Greenes (Ed.), Symposium on computer applications in medical care (pp. 371-376...

...K.J. Hannah & M. Reimer (Eds.), Clinical judgment and decision making: The future with nursing **diagnosis** (pp.540-555). New York: John Wiley & Sons.

Zadek, L.A. (1978). A **fuzzy** algorithmic approach to the definition of complex or imprecise concepts. International Journal of Man-Machine...

6/3,K/3 (Item 3 from file: 149)

01605910 SUPPLIER NUMBER: 17544476 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Introduction to neural networks.(Neural Networks)
Cross, Simon S.; Harrison, Robert F.; Kennedy, R. Lee
The Lancet, v346, n8982, p1075(5)
Oct 21,
1995
PUBLICATION FORMAT: Magazine/Journal ISSN: 0099-5355 LANGUAGE: English
RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE: Professional
WORD COUNT: 4407 LINE COUNT: 00353

ABSTRACT: Neural networks are becoming a promising new **diagnostic** tool in the area of decision support. Ideally such networks are set up to enhance...

TEXT:

...items of data from past experience of seeing patients, collecting data from them, making a **diagnostic** prediction, and then comparing this with the actual outcome. A physician attending a patient presenting...

Experienced physicians are more likely to make correct **diagnoses** than newcomers just because they have had more experience and have learned from it. There...

...cases which is not affected by turnover of staff. The decision-making engine in such **diagnostic** suport aids can be any form of statistical or rule-based system that provides the...

...1c). When multiple items of data for each case produce clusters of cases with the **diagnosis** within a "background" of cases (figure 1d) without the **diagnosis** it is very difficult to separate the two populations by multivariate discriminant analysis.

In cases...

...way a large set of data with known outcome is used to train an artificial **neural network** , and another series of data from patients with known outcome must be applied to the...

...software emulation on a microcomputer) to assess its performance (figure 2).

What is an artificial **neural network** ?

An artificial network consists of a set of processing units (nodes) which simulate neurons and...

...threshold is exceeded the node fires, otherwise it remains quiescent.[3] Computational power in a **neural network** derives not from the complexity of each processing unit (as in a conventional computer) but...

...density and complexity of the interconnections. In further contrast with conventional computers, memory in a **neural network** is distributed

throughout its structure (in the weights) and is modified by experience. Conventional computers...

...sometimes in parallel, on one or more very complex central processing units. Structurally, an artificial **neural network** is more like a natural (biological) **neural network**, such as the human brain, and biological networks function well in pattern recognition and discrimination ...

...linear discriminant analysis, we can calculate the size of sample needed to achieve a given **level** of **confidence** in subsequent performance. However, neural networks are non-linear and no such calculation is yet...

...The choice of threshold beyond which the current patient the clinician is faced with is **diagnosed** positive and below which negative can be assisted by the receiver operating characteristic (ROC) curve...

...the system,[5] and clinicians will have come across these before in journal articles on **diagnostic** and screening tests.

When does training stop? This is not straightforward for many network structures...

...obtained. However, feed forward networks may have significant advantages over conventional statistical methods when making **diagnostic** or prognostic predictions. The multilayer Perceptron, when acting as a one-from-many classifier - eg, picking on a **diagnosis** from several possibilities - estimates ...data or even some errors in the input data may not lead to an incorrect **diagnosis** in well-trained networks because they have some properties of generalisation and fault tolerance.[4...

...there is overfitting poor quality data can lead to error. Once trained, a feed forward **neural network** is easily implemented via a bench-top computer system which functions in real-time.

Supervised...

...learns an association between one type of data and another (eg, between symptoms and differential **diagnoses**). When the network is supervised during training a class label is provided every time a...

...but that is expensive and time-consuming, and you would have to call in a **neural network** engineer.

To enable a **neural network** to continue to learn in situ, without the need for an engineer, requires the introduction...

...input is it deemed to be a member of the class (ie, to have the **diagnosis**). The state of knowledge about the class is thus updated (learning). If the match is...

...described above while [ART.sub.b] simply encodes the output categories, corresponding to the different **diagnoses** , as a one-from-many code. The "map field" sets up pointers between the clusters formed at [ART.sub.a] and the **diagnoses** at [ART.sub.b]. The "vigilance" parameter ([p.sub.a]) defines the closeness with which...commercial software packages are available (Neurobank, Brainmaker, Matlab) which implement all the common types of **neural network** and are user-friendly, allowing the non-specialist user access to them. The basic requirement...

...yet known - set of training and testing data which includes verified outcomes. In this the **neural network** development process does not differ from that of any other data-derived decision aid or...

...before a network's predictive performance in a clinical setting can be judged.

In the **diagnostic** arena neural networks will probably be seen as components of larger systems which make use...

...use.

These tools will only be used if they meet a clinical need, and early **diagnosis** in patients with chest pain/suspected acute myocardial infarction is a good area in which...

...JH. ARTMAP: supervised realtime learning and classification of non-stationary data by a self-organizing **neural network** . Neural Networks 1991; 4: 565-88. [14] Carpenter GA, Tan A. Rule extraction, **fuzzy** ARTMAP, and medical databases. In: Proceedings of World Congress on Neural Networks 1993; vol I...

...DESCRIPTORS: **Diagnostic** use

6/3,K/4 (Item 4 from file: 149)
DIALOG(R)File 149:TGG Health&Wellness DB(SM)

01376177 SUPPLIER NUMBER: 13501742 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Analysis of underwriting factors for AAPCC. (adjusted average per capita cost)
Manton, Kenneth G.; Stallard, Eric
Health Care Financing Review, v14, n1, p117(16)
Fall,
1992
PUBLICATION FORMAT: Magazine/Journal ISSN: 0195-8631 LANGUAGE: English
RECORD TYPE: Fulltext; Abstract TARGET AUDIENCE: Professional
WORD COUNT: 10707 LINE COUNT: 00865

... Prior service use (e.g., Beebe, Lubitz, and Eggers, 1985), disability status, and, most recently, **diagnostic** cost groups (DCG) have been considered as additional underwriting factors (Epstein and Cumella, 1988; Ash...loadings (i.e., the amount of additional premium necessary to compensate for losses) at these **levels** of **confidence** . For example, the average total payment is $1,853.64 (i.e., 12 x $104...enroll a population that was strongly biased toward being healthy. This is because persons with **diagnosed** ailments, and with established relations with caregivers, are unlikely to drop their current providers to...system (Cummins et al., 1983) where continuous variation in risk is represented.

The use of " **fuzzy** sets" to conduct risk scoring, an area of current research by the Society of Actuaries...K.G., Stallard, E., and Woodbury, M.A.: A Multivariate Event History Model Based Upon **Fuzzy** States: Estimation From Longitudinal Surveys With Informative Nonresponse. Journal of Official Statistics (Stockholm, Sweden) 7...
?

```
Set      Items   Description
S1       82666   FUZZY OR NEURAL()(NET OR NETWORK)
S2     1381370   CLINICAL()CONCLUSION OR DIAGNOS?
S3     3064216   CONFIDENCE OR CERTAINTY OR ACCURACY
S4        1215   S1 AND S2 AND S3
S5         590   S4 AND MEDIC???
S6        1114   S1(S)S2
S7           1   S6(S)(CONFIDENCE(2N)LEVEL? ?)
S8           9   S6 AND (CONFIDENCE(2N)LEVEL? ?)
S9           9   RD (unique items)
? show file
File   9:Business & Industry(R) Jul/1994-2005/Nov 21
         (c) 2005  The Gale Group
File  15:ABI/Inform(R) 1971-2005/Nov 21
         (c) 2005 ProQuest Info&Learning
File  16:Gale Group PROMT(R) 1990-2005/Nov 22
         (c) 2005 The Gale Group
File 148:Gale Group Trade & Industry DB 1976-2005/Nov 22
         (c)2005 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 275:Gale Group Computer DB(TM) 1983-2005/Nov 21
         (c) 2005 The Gale Group
File 621:Gale Group New Prod.Annou.(R) 1985-2005/Nov 22
         (c) 2005 The Gale Group
File 636:Gale Group Newsletter DB(TM) 1987-2005/Nov 22
         (c) 2005 The Gale Group
File  20:Dialog Global Reporter 1997-2005/Nov 22
         (c) 2005 Dialog
File 476:Financial Times Fulltext 1982-2005/Nov 23
         (c) 2005 Financial Times Ltd
File 610:Business Wire 1999-2005/Nov 22
         (c) 2005 Business Wire.
File 613:PR Newswire 1999-2005/Nov 22
         (c) 2005 PR Newswire Association Inc
File 624:McGraw-Hill Publications 1985-2005/Nov 21
         (c) 2005 McGraw-Hill Co. Inc
File 634:San Jose Mercury  Jun 1985-2005/Nov 20
         (c) 2005 San Jose Mercury News
File 810:Business Wire 1986-1999/Feb 28
         (c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30
         (c) 1999 PR Newswire Association Inc
```

9/3,K/1 (Item 1 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

02858975 715533091
The rough set theory and applications
Wu, Chengdong; Yue, Yong; Li, Mengxin; Adjei, Osei
Engineering Computations v21n5/6 PP: 488-511 2004
ISSN: 0264-4401 JRNL CODE: NGCP
WORD COUNT: 11358

...TEXT: attribute from a condition part gives a rule covering also negative objects. The coefficient of **confidence level** describes the rule extent and the consistent number of all examples covered by the rule ...

...decision support systems in medicine and proposed two methods. One method combines neural networks and **fuzzy** set to build a neuro- **fuzzy** classifier that can be trained with purely numerical data, qualitative, linguistic and **fuzzy** data that describe the decision process. The other method considers all positive aspects of rule...

...of surgical and non-surgical cases in the veterinary domain of equine colic and the **diagnosing** of benign and malign types of breast cancer. Their work compared several aspects of performance...for prognostic modelling of disease states for medical applications based on the rough set and **fuzzy** logic algorithms. The rough set is used to extract rules from a database. The data are reformatted into a **fuzzy** logic template and a learning algorithm is used to adjust **fuzzy** set membership functions. The method is applied to evaluating risk factors associated with progression of coronary artery disease. The proposed rough- **fuzzy** set method predicts progression of atherosclerotic disease with a correct rate of 69 per cent of the patients, which is statistically better than the **neural network** , rough set and logistic models performed. Yahia et al. (2000) presented a hybrid expert system...

...is constructed. The performance of the proposed system is evaluated through the application of medical **diagnosis** using a real example of hepatitis disease. The experimental results show that the system has...

9/3,K/2 (Item 2 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

02771378 618960331
FINANCIAL INNOVATION AND DIVISIA MONEY IN TAIWAN: COMPARATIVE EVIDENCE FROM NEURAL NETWORK AND VECTOR ERROR-CORRECTION FORECASTING MODELS
Binner, Jane M; Gazely, Alicia M; Chen, Shu-Heng; Chie, Bin-Tzong
Contemporary Economic Policy v22n2 PP: 213-224 Apr 2004
ISSN: 1074-3529 JRNL CODE: CPI
WORD COUNT: 6670

...TEXT: models were constructed for each of the four systems and parameters insignificant at the 5% **level** of **confidence** were deleted from the model to obtain a more parsimonious specification, thereby reducing the standard...

...presented here for reasons of brevity but are available from the authors on request. Both **neural network** and VECM model performances are

compared to that of a simple random walk model.

V...

9/3,K/3 (Item 3 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

00790823 94-40215
Analysis of machine degradation using a neural network based pattern discrimination model
Lee, Jay; Kramer, Bruce M
Journal of Manufacturing Systems v12n5 PP: 379-387 1993
ISSN: 0278-6125 JRNL CODE: JMY
WORD COUNT: 3847

...TEXT: estimated tool wear using neural networks. Uhrig and Guo(22) have used the back propagation **neural network** to identify transient operating conditions in nuclear power plants. Franklin, Sutton, and Anderson(11) from GTE have used ADALINE and NADALINE, a one-layer **neural network** , to monitor fluorescent bulb manufacturing. Ford Motor Co. has developed automotive control system **diagnostics** using neural networks for rapid pattern classification of large data sets.(10) The data for...

...back propagation classification algorithm was used for fault recognition. However, real-time fault detection and **diagnostics** have not been implemented due to the limitation of the real-time data acquisition and learning.
Netrologic, Inc. has also developed a **neural network** -based fault detection and **diagnostics** tool for NASA. A feed-forward **neural network** was used to recognize the signature of a valve in the ATLAS rocket (which contains...

...types of valves during a valve-closed state change (falling current). The use of a **neural network** in monitoring machine degradation was first proposed by Lee and Kramer.(23) A CMAC **neural network** based reasoning tool was developed to analyze the consistence of the machine behavior based on...machine tool manufacturers to predict the positioning behavior of various moving elements to a stated **confidence level** and provides the customer with an assurance of the machine's performance. Typically, poor position...System, NASA SBIR NAS9-17995, July 1990.

10. K. Marko, "Automotive Control System Diagnostics Using **Neural Network** for Rapid Pattern Classification of Large Data Sets," Proceeding of International **Neural Net** Society Meeting, Washington, DC, June 1989, pp. 13-16.

11. J.A. Franklin, R.S...

...Kiech, and M. Ali, "Jet and Rocket Engine Fault Diagnosis in Real Time," Journal of **Neural Network** Computing, Summer 1989, pp. 5-19.

21. F. Stevenson and D. Greenwood, Tool Wear Estimation...

9/3,K/4 (Item 1 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

08279450 SUPPLIER NUMBER: 17544476 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Introduction to neural networks.(Neural Networks)
Cross, Simon S.; Harrison, Robert F.; Kennedy, R. Lee
Lancet, v346, n8982, p1075(5)
Oct 21, 1995
ISSN: 0099-5355 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 4429 LINE COUNT: 00355

... linear discriminant analysis, we can calculate the size of sample needed to achieve a given **level** of **confidence** in subsequent performance. However, neural networks are non-linear and no such calculation is yet...there is overfitting poor quality data can lead to error. Once trained, a feed forward **neural network** is easily implemented via a bench-top computer system which functions in real-time.
Supervised...

...input is it deemed to be a member of the class (ie, to have the **diagnosis**). The state of knowledge about the class is thus updated (learning). If the match is...

9/3,K/5 (Item 2 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

06699046 SUPPLIER NUMBER: 14378729 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Practical neural networks aid spectroscopic analysis.
Lerner, Jeremy M.; Taiwei Lu
Photonics Spectra, v27, n8, p93(5)
August, 1993
ISSN: 0731-1230 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT
WORD COUNT: 1956 LINE COUNT: 00154

... review two real-world applications for this technology -- remote detection of toxic chemicals and early **diagnosis** of cancer.
Neural-net background
A true real-time neural net is a parallel processor...

...lo). Alternatively, the neuron could produce an 8-bit (or greater) number indicating the probability (**confidence level**) that such a substance is present in the sample. Finally, the NN could be set...

9/3,K/6 (Item 1 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01440725 SUPPLIER NUMBER: 10918086 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Getting caught in a neural network.
Keyes, Jessica
AI Expert, v6, n7, p44(6)
July, 1991
ISSN: 0888-3785 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 3405 LINE COUNT: 00265

... output. The commercial-loan system outputs a number from zero to nine, which reflects the **confidence level** the bank has in the company being able to repay its loan.
INSPECTING FOR FAULTS...s experience to learn what we know." And all it seems to take is a **neural net** to codify it.

Jessica Keyes is president of New Art/Techinsider, a technology solutions firm...

9/3,K/7 (Item 2 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01371544 SUPPLIER NUMBER: 08813036 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Object-oriented shells. (tutorial)
Knaus, Rodger
AI Expert, v5, n9, p19(4)
Sept, 1990
DOCUMENT TYPE: tutorial ISSN: 0888-3785 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 1546 LINE COUNT: 00123

... of the statement-if its truth is known, the statement is true or false, its **confidence level** , and if the statement is askable or observable-is represented by information in the object...

...rule-based system.
We could also use information learned through reasoning as inputs to a **neural - net** procedure. For example, suppose the rule based expert system renders a **diagnosis** . We could train a **neural net** to predict the patient's prognosis; the inputs would be information from the medical charts...

9/3,K/8 (Item 3 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01358602 SUPPLIER NUMBER: 08463262 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Expert systems explained.
Steinhart, Jim
Canadian Datasystems, v22, n4, p30(3)
April, 1990
ISSN: 0008-3364 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 2035 LINE COUNT: 00159

... seeks important facts to reach the goal. Most also offer forward chaining used to solve **diagnoses** or **fuzzy** -goal type problems. Forward chaining is used to take inferences about known facts as far...

...answers. They can allow users to state the probability that an answer is correct (a **confidence level**). Using mathematical formulae, the shells decide and act on the probability that IF-THEN rules...

9/3,K/9 (Item 1 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter

43744615 (USE FORMAT 7 OR 9 FOR FULLTEXT)
What's Your BI Environment IQ?
Michael L. Gonzales
DM REVIEW
August 01, 2005
JOURNAL CODE: TDMR LANGUAGE: English RECORD TYPE: FULLTEXT

WORD COUNT: 2377

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... the decision-making process to computers.

By combining conventional control systems and machine intelligent components (**fuzzy** logic, neural networks, genetic algorithms and expert systems), we can achieve higher degrees of performance in reactor operations such as reactor startup, shutdown in emergency situations, fault detection and **diagnosis** , nuclear reactor alarm processing and **diagnosis** . With the advancement of new technologies and computing power, it is feasible to automate most...but the process is slowed considerably and the solution is often chosen with a low **level** of **confidence** .

There exists plenty of room for your BI environment to improve the performance of decision...

?

02771378 618960331

FINANCIAL INNOVATION AND DIVISIA MONEY IN TAIWAN: COMPARATIVE EVIDENCE FROM NEURAL NETWORK AND VECTOR ERROR-CORRECTION FORECASTING MODELS

Binner, Jane M; Gazely, Alicia M; Chen, Shu-Heng; Chie, Bin-Tzong

Contemporary Economic Policy v22n2 PP: 213-224 Apr 2004
ISSN: 1074-3529 JRNL CODE: CPI
WORD COUNT: 6670

...TEXT: models were constructed for each of the four systems and parameters insignificant at the 5% **level** of **confidence** were deleted from the model to obtain a more parsimonious specification, thereby reducing the standard...

...presented here for reasons of brevity but are available from the authors on request. Both **neural network** and VECM model performances are compared to that of a simple random walk model.

9/9/7 (Item 2 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)

01371544 SUPPLIER NUMBER: 08813036 (THIS IS THE FULL TEXT)
Object-oriented shells. (tutorial)
Knaus, Rodger
AI Expert, v5, n9, p19(4)
Sept, 1990
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ABSTRACT: Object-oriented programming allows logical deduction with non-logical methods such as neural networks. Logical statements, connectors and neurons can be represented by objects and manipulated independent of their nature. Neural networks can be used to determine a result, and the result can be converted to a form usable by the expert system. Object-oriented programs follow the same format as non-object programs, but information is stored in statement objects rather than direct storage. In PROLOG, rule and statement objects are put in frame data structures and implemented as facts with one argument. Statement objects allow different inference algorithms to be integrated into a single shell and improve problem-solving control outside the inference engine.
TEXT:

Sometimes you may want to combine lo cal deduction, the staple of rule-based expert systems, with neural nets and other nonlogical inference methods. This task isn't easy from an implementation standpoint because the knowledge representations used by neural nets and expert systems are completely different.

However, object-oriented programming provides a knowledge representation that can bridge the symbolic and neural representations. The basic idea is pretty simple: use objects to represent neurons, connections and logical statements. In such an object implementation, inference, whether logical or neural, is represented by state changes in objects. This month we'll perform logical deduction-in particular, a wards chaining inference engine in an object-oriented way. You can use the same techniques to recast a neural net in object form.

Before we plunge into the programming details, let's see how we could use an object-oriented inference engine if we had one. Human experts, like the mechanic listening to an engine or a doctor examining a patient, look, listen and feel for important clues to a problem. Then they reason about what they observe and perhaps make additional observations rom ted by this reasoning. If we wanted to imitate this process on a computer we could use a rule-based expert system for the reasoning and neural nets for the observations. Each of these technologies is much more limited than the comparable human capability.

We'll assume that each statement the expert system reasons about is represented by a statement object. We'll also assume that the status of the statement-if its truth is known, the statement is true or false, its **confidence level** , and if the statement is askable or observable-is represented by information in the object representing the statement.

For statements whose truth is known from an observation simulated by a neural net, we'll assume that the activation of some output neuron of a neural net indicates whether the net tells us the statement has been observed. For example, a doctor may observe the general energy level of a patient. For simplicity, we'll assume three energy levels: lethargic, normal or agitated. While the doctor perceives this energy level without conscious reasoning, a neural net could probably be trained to make a judgment (given a large enough set of highly specific inputs), such as whether the patient fidgets or turns to look at the doctor.

We'll assume our neural net has three output neurons, one for each activity level. When the specific inputs for a patient are fed in, the resulting activation level of each output neuron represents whether that energy level was observed. An activation near one for lethargic, for instance, would tell us that the neural net compute that the patient was lethargic.

Suppose the neural ne this activation for the "Patient is lethargic" neuron in the object representing the "Patient is lethargic" statement. We can translate the neuron activation into information that the symbolic expert system can recognize. For example, if the neuron activation is near its maximum value (near one in many nets) we might set the truth-value slot of the Patient is lethargic object to true. The fact that the patient is lethargic is now an input available to the rule-based system.

We could also use information learned through reasoning as inputs to a **neural - net** procedure. For example, suppose the rule based expert system renders a **diagnosis** . We could train a **neural net** to predict the patient's prognosis; the inputs would be information from the medical charts of similar previous cases. The actual recovery status of these patients are the desired outputs used to train the net. After the net is trained, we could run our current patient's chart through the prognosis network and read the new patient's prognosis from the output activations of the net.

A SIMPLE SHELL

We'll start with a simple nonobject shell. The top level of the inference engine is:

```
solve:
-    find_goal(GOAL),
   try(GOAL).
```

This code says that all an inference engine does is look for problem-solving goals and try to execute them. In converting to objects, the important procedure is try, which finds solutions to goals. try implements a sequence of problem-solving strategies-.

* Use an already-known solution
* Give up if you've already failed to solve the goal
* Ask the user. Give up if the user's answer isn't in the acceptable range; otherwise, use it n Apply Boolean rules for and and or n Try using a rule whose conclusion is the current goal.

A shell's particular order and selection of strategies doesn't change by making the shell object-oriented.

Listing I shows the implementation of try when information about the status of the solution is kept in the program's internal database. Notice, for example, that the first four rules look for status information in the database, while rules 3 and 7 put status information there.

CONVERTING TO OBJECTS

Listing 2 shows some of the same computations using objects. Because the status information (for example, whether a goal has been tried) is now a part of statement objects rather than directly stored, the code becomes more complex. Notice, however, that the plan of the computation, shown in the comments, remains the same. Instead of looking for status information in the program's internal database, we find the relevant statement or rule object and look for the information in a slot. And instead of updating status information in the database, we update the statement objects.

OPERATING ON OBJECTS

Our object-oriented inference engine uses frames as the implementation data structure for rule and statement objects. We index all statements under the English text of the statement for fast retrieval. We also index rules under the text of the rule conclusion.

The frames are implemented as single-argument PROLOG facts. The functor of a frame fact is the class to which the frame belongs; for example, statementor rule. The single argument of the frame is the list of its slots and values.

As an example frame computation, the following program get slot value) gets the value of a particular slot in a frame:

```
% get the slot list
% out of the frame
frame_op($get slot value$,
   FRAME,SLOT,VALUE):
-   FRAME =..[_SLOT_LIST],
   !,
   frame_op($get slot value$,
   SLOT_LIST,SLOT,VALUE).
% get the value if it's next
% in the slot list
   frame_op($get slot value$,
   [SLOT:VALUE
_],
    SLOT, VALUE):-!.
% otherwise search the rest of
% the slot list
frame_op($get slot value$,
   [_
REST),
   SLOT, VALUE):
-   !,
   frame_op($get slot value$,
            REST,
            SLOT,
            VALUE).
```

The most basic and powerful operation on frames is frame unification, a generalization of the usual unification on terms to structures that permit a variable rather than fixed slot structure. Here are the specifications for frame unification; it's implemented by code similar to but more complex than get slot value:

* Unify two frames if their types are compatible and their slot lists unify
* Frame types will unify if they're identical or if at least one frame is untyped. If you are implementing inheritance, frames unify if one frame is a subtype of the other
* Slot lists unify if corresponding slot values unify a Slot values unify if the slot appears in both frames and the two values unify
* Slot values unify if the slot appears in only one frame. The value of the slot in the other frame is then assumed to be an uninstantiated variable.

More details about implementing frames and objects in PROLOG appear in the suggested reading. The source code for the object-oriented shell and the frame library appear on the AI EXPERT and Instant Recall Bulletin Board Systems. WHY USE OBJECTS? We've already discussed how statement objects can help us integrate different inference algorithms into a single shell. In addition, using objects makes it easier to control problem-solving from outside the inference engine.

For example, we can implement a what-if facility by adding a world slot to statement objects. Statements that are true in the real world have a real value in this slot, while statements that are true in the what-if world have an imaginary value in this slot. We can also modify the shell to keep track of the current world it is in and use only statements that belong to that world.

Here's what happens when the user does a what-if consultation using the modified shell:

1. Erase old imaginary statements
2. Copy each real statement into a corresponding imaginary statement
3. Change the world from real to imaginary
4. Let the user change the values of known statements in the

imaginary world

5. Run the shell in the imaginary world, reporting conclusions in the usual way-along with a notice that they answer a what-if question

6. When the user ends the what-if consultation,

6a. Purge all of the imaginary statements

6b. Change the world back to real.

We could do all these steps without statement objects, but with them it's a lot easier because all the information that describes the state of a solution is packaged for easy retrieval and modification in the statement objects.

CAPTIONS: Problem solving using 'try.' (program); A frame-oriented implementation of the problem-solving shell. (program)

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